

In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (Currently Amended):. An optical reader for reading a symbol representing information having areas of different light reflectivity, the reader comprising:

a radiant energy source for generating a radiant energy for illuminating a target region as a spot illumination;

5 a photodetector for generating output electrical signals indicative of the radiant energy incident thereon;

an optical system having:

a projection portion for directing the radiant energy along a projection path extending from the radiant energy source to the target region at a fixed angle to the surface thereof such that light reflected therefrom is directed along the longitudinal axis in a diverging manner,

10 a collection portion for collecting the radiant energy reflected from a symbol along the longitudinal axis when the symbol occupies the target region and directing the collected radiant energy along a collection path extending from the target region to the photodetector along the longitudinal axis as a column of parallel rays, the collection portion including:

one pinhole aperture disposed upstream and parallel to [[on]] the collection path from the photodetector without intervening refraction or diffraction and centered along the longitudinal axis, and

20 one magnifying lens disposed upstream on the collection path from the pinhole aperture without intervening refraction or diffraction for collimating reflected light perpendicular to the aperture and along the longitudinal axis; and

a decoder for decoding the output electrical signals of the photodetector to provide an indication of the information contained in the symbol.

Claim 2 (Original): An optical reader in accordance with Claim 1, wherein the collection portion includes no other refracting or diffracting elements disposed along the collection path.

Claim 3 (Original): An optical reader in accordance with Claim 2, further comprising a protective window disposed upstream on the collection path from the magnifying lens, the protective window having parallel surfaces disposed perpendicular to the collection path.

Claim 4 (Original): An optical reader in accordance with Claim 3, wherein the collection portion includes no other elements disposed along the collection path.

Claim 5 (Original): An optical reader in accordance with Claim 1, wherein the magnifying lens is a double-convex lens.

Claim 6 (Original): An optical reader in accordance with Claim 1, wherein the magnifying lens is a plano-convex lens.

Claim 7 (Original): An optical reader in accordance with Claim 1, wherein the collection portion provides to the photodetector a dimensionally magnified image of the symbol occupying the target region.

Claim 8 (Original): An optical reader in accordance with Claim 7, wherein the image of the symbol occupying the target region provided to the photodetector is dimensionally magnified by a factor within the range of about 0.5X to about 5X.

Claim 9 (Original): An optical reader in accordance with Claim 8, wherein the image of the symbol occupying the target region provided to the photodetector is dimensionally magnified by a factor within the range of about 1.5X to about 2.5X.

AMENDMENT AND RESPONSE

S/N 09/580,848

Atty. Dkt. No. PHL-25,087

Claim 10 (Original): An optical reader in accordance with Claim 9, wherein the image of the symbol occupying the target region provided to the photodetector is dimensionally magnified by a factor within the range of about 1.9X to about 2.1X.

Claim 11 (Original): An optical reader in accordance with Claim 1, wherein the photodetector is a photo-diode.

Claim 12 (Original): An optical reader in accordance with Claim 1, wherein the photodetector is a photo-transistor.

Claim 13 (Original): An optical reader in accordance with Claim 1, wherein the photodetector is a photo-resistor.

Claim 14 (Original): An optical reader in accordance with Claim 1, wherein the photodetector is a charge coupled device (CCD).

Claim 15 (Original): An optical reader in accordance with Claim 1, wherein the photodetector and the pinhole aperture are packaged together as a discrete detector unit.

Claim 16 (Previously Presented): An optical reader in accordance with Claim 15, wherein ~~the detector unit~~ the discrete detector unit further comprises:

a base having a top surface upon which the photodetector is mounted; and

a cap mounted to the base and having a top portion spaced apart from the top surface of the base to define an interior cavity containing the photodetector, the cap having a single pinhole formed therethrough at a predetermined distance from the photodetector and being otherwise light-tight.

Claim 17 (Original): An optical reader in accordance with Claim 16, wherein the cap of the detector unit is a cylindrical metallic canister having a flat top.

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Claim 18 (Original): An optical reader in accordance with Claim 17, wherein the cap of the detector unit has a diameter within the range of about 3 mm to about 20 mm.

Claim 19 (Original): An optical reader in accordance with Claim 18, wherein the cap of the detector unit has a diameter within the range of about 4 mm to about 8 mm.

Claim 20 (Original): An optical reader in accordance with Claim 19, wherein the cap of the detector unit has a diameter within the range of about 5.5 mm to about 6.5 mm.

Claim 21 (Original): An optical reader in accordance with Claim 16, wherein the predetermined distance between the photodetector and the pinhole is within the range of about 1 mm to about 10 mm.

Claim 22 (Original): An optical reader in accordance with Claim 21, wherein the predetermined distance between the photodetector and the pinhole is within the range of about 3 mm to about 7 mm.

Claim 23 (Original): An optical reader in accordance with Claim 22, wherein the predetermined distance between the photodetector and the pinhole is within the range of about 4.5 mm to about 6 mm.

Claim 24 (Original): An optical reader in accordance with Claim 1, wherein the radiant energy source is a light-emitting diode (LED).

Claim 25 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal which emulates keyboard keystrokes.

Claim 26 (Original): An optical reader in accordance with Claim 25, wherein the decoder

provides an output signal in accordance with the PS/2 keyboard interface standard.

Claim 27 (Original): An optical reader in accordance with Claim 25, wherein the decoder provides an output signal in accordance with the AT keyboard interface standard.

Claim 28 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Universal Serial Bus (USB) standard.

Claim 29 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the RS-232 standard.

Claim 30 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the RS-423 standard.

Claim 31 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the IEEE 1394 (FIREWIRE) interface.

Claim 32 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Integrated Drive Electronics (IDE) interface standard.

Claim 33 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Enhanced Integrated Drive Electronics (EIDE) interface standard.

Claim 34 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Asynchronous Transfer Mode (ATM) transmission standard.

Claim 35 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Fiber Distributed Data Interface (FDDI) interface standard.

Claim 36 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the 8-bit Industry Standard Architecture (ISA) bus standard.

Claim 37 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the 16-bit Industry Standard Architecture (ISA) bus standard.

Claim 38 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the VL-Bus bus standard.

Claim 39 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Peripheral Component Interconnect (PCI) bus standard.

Claim 40 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Personal Computer Memory Card International Association (PCMCIA) bus standard.

Claim 41 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Centronics Parallel Port standard.

Claim 42 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Enhanced Parallel Port (EPP) standard.

Claim 43 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Extended Capabilities Port (ECP) standard.

Claim 44 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with the Small Computer System Interface (SCSI) interface standard.

Claim 45 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with an Ethernet network standard.

Claim 46 (Original): An optical reader in accordance with Claim 1, wherein the decoder provides an output signal in accordance with a token ring network standard.

Claim 47-69 (Canceled)